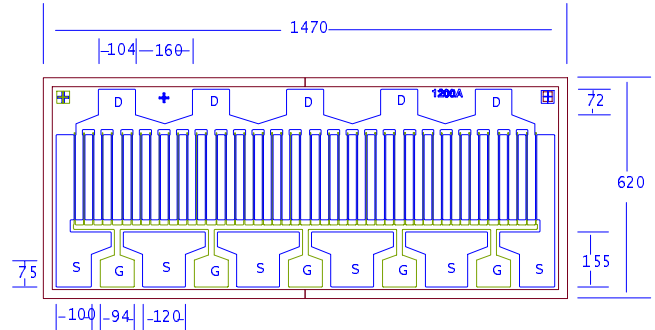


**DATA SHEET**
**High Efficiency Heterojunction Power FET**

- **+39.5dBm TYPICAL OUTPUT POWER**
- **18.0dB TYPICAL POWER GAIN AT 2GHz**
- **0.4 X 12,000 MICRON RECESSED “MUSHROOM” GATE**
- **Si<sub>3</sub>N<sub>4</sub> PASSIVATION**
- **ADVANCED EPITAXIAL HETEROJUNCTION PROFILE PROVIDES EXTRA HIGH POWER EFFICIENCY, AND HIGH RELIABILITY**
- **Idss SORTED IN 300mA PER BIN RANGE**


**ELECTRICAL CHARACTERISTICS (T<sub>a</sub> = 25 °C)**

Chip Thickness: 50 ± 10 microns  
 (with > 20 microns Gold Plated Heat Sink (PHS))  
 All Dimensions In Microns

SYMBOLS	PARAMETERS/TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>P<sub>1dB</sub></b>	Output Power at 1dB Compression V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>dss</sub>	f= 2GHz 38.0	f= 2GHz 39.5		dBm
<b>G<sub>1dB</sub></b>	Gain at 1dB Compression V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>dss</sub>	f= 2GHz 16.5	f= 2GHz 18.0		dB
<b>PAE</b>	Power Added Efficiency at 1dB Compression V <sub>ds</sub> =8V, I <sub>ds</sub> =50% I <sub>dss</sub>	f=2GHz	43		%
<b>I<sub>dss</sub></b>	Saturated Drain Current V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	2200	3600	4700	mA
<b>G<sub>m</sub></b>	Transconductance V <sub>ds</sub> =3V, V <sub>gs</sub> =0V	2400	3800		mS
<b>V<sub>p</sub></b>	Pinch-off Voltage V <sub>ds</sub> =3V, I <sub>ds</sub> =36mA		-1.0	-2.5	V
<b>BV<sub>gd</sub></b>	Drain Breakdown Voltage I <sub>gd</sub> =12mA	-11	-15		V
<b>BV<sub>gs</sub></b>	Source Breakdown Voltage I <sub>gs</sub> =12mA	-7	-14		V
<b>R<sub>th</sub></b>	Thermal Resistance (Au-Sn Eutectic Attach)		4		°C/W

**MAXIMUM RATINGS AT 25°C**

SYMBOLS	PARAMETERS	ABSOLUTE <sup>1</sup>	CONTINUOUS <sup>2</sup>
<b>V<sub>ds</sub></b>	Drain-Source Voltage	12V	8V
<b>V<sub>gs</sub></b>	Gate-Source Voltage	-8V	-3V
<b>I<sub>ds</sub></b>	Drain Current	I <sub>dss</sub>	3.5A
<b>I<sub>gsf</sub></b>	Forward Gate Current	600mA	100mA
<b>P<sub>in</sub></b>	Input Power	37dBm	@ 3dB Compression
<b>T<sub>ch</sub></b>	Channel Temperature	175°C	150°C
<b>T<sub>stg</sub></b>	Storage Temperature	-65/175°C	-65/150°C
<b>P<sub>t</sub></b>	Total Power Dissipation	34 W	28 W

Note: 1. Exceeding any of the above ratings may result in permanent damage.

2. Exceeding any of the above ratings may reduce MTTF below design goals.

# EPA1200A

## DATA SHEET

### High Efficiency Heterojunction Power FET

#### S-PARAMETERS

8V, 1/2 Idss

FREQ (GHz)	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.500	0.966	-161.3	7.649	95.5	0.011	16.3	0.675	-175.7
1.000	0.966	-171.3	3.849	86.9	0.012	18.6	0.683	-176.9
1.500	0.966	-175.0	2.555	81.4	0.012	23.8	0.690	-177.0
2.000	0.966	-177.1	1.901	76.8	0.012	29.7	0.698	-176.9
2.500	0.967	-178.5	1.505	72.7	0.013	35.7	0.707	-176.8
3.000	0.967	-179.6	1.239	68.7	0.014	41.4	0.718	-176.8
3.500	0.968	179.4	1.047	65.1	0.015	46.7	0.729	-176.8
4.000	0.969	178.6	0.902	61.6	0.016	51.5	0.742	-177.1
4.500	0.969	177.8	0.788	58.3	0.017	55.6	0.754	-177.4
5.000	0.970	177.1	0.697	55.2	0.019	59.2	0.767	-177.8
5.500	0.971	176.4	0.622	52.2	0.020	62.2	0.779	-178.4
6.000	0.971	175.7	0.559	49.5	0.022	64.6	0.791	-179.0
6.500	0.972	175.0	0.506	46.9	0.024	66.6	0.803	-179.7
7.000	0.973	174.4	0.461	44.6	0.026	68.2	0.814	179.5
7.500	0.973	173.8	0.422	42.4	0.028	69.4	0.825	178.7
8.000	0.974	173.2	0.388	40.4	0.030	70.4	0.835	177.8
8.500	0.974	172.6	0.358	38.6	0.032	71.1	0.845	176.9
9.000	0.975	172.0	0.332	36.9	0.035	71.6	0.854	175.9
9.500	0.975	171.4	0.309	35.4	0.037	71.9	0.862	175.0
10.000	0.976	170.8	0.288	34.1	0.039	72.1	0.870	174.0

Note: The data included 0.7 mils diameter Au bonding wires:  
5 gate wires, 20 mils each; 5 drain wires, 12 mils each; 12 source wires, 7 mils each.